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writings of most North American tribes, ancient and modern, in which the sun symbol occurs frequently.

5. Also in the position of ruined stone houses which look toward the east, the larger rectangular buildings of the Pacific slope being built so as to face the cardinal points.

6. Finally, we can observe signs of this worship in the orientation of dead bodies in graves.

If we accept these briefly stated facts, there can be no reasonable doubt that the worship of the sun entered, to some degree, into the religions of the American aborigines; how far, we have not the means of determining; yet, quoting the poet Southey's words,—

"I marvel not, O sun! that unto thee  
In adoration man should bow the knee,  
And pour the prayer of mingled awe and love;  
For like a god thou art, and on thy way  
Of glory sheddest, with benignant ray,  
Beauty, and life, and joyance from above."

—:O:—

## A NEW LOCALITY FOR CORDYLOPHORA.

BY S. F. CLARKE.

THIS interesting form of compound hydroid was first discovered in this country by Prof. Leidy, a number of years ago. It was found living "in a slightly brackish pond near the coast," in the neighborhood of Newport, Rhode Island. In October, 1870, it was again taken by Prof. Leidy, this time in the Schuylkill river, near Philadelphia. A record of the same will be found in the Proceedings of the Academy of Natural Sciences, Philadelphia, for 1870, page 113, from which we learn that Prof. Leidy had not decided whether his specimens were distinct from *C. lacustris* Allman. He says "It appears however to be much smaller. Allman says the colonies are several inches and the polyps a line in length. Ours are not more than one-half that size. As a variety it might be named *C. americana*." Unfortunately there are no specimens to refer to and their specific identity must be left undetermined.

On the thirteenth of last October a collecting party of three from the John Hopkins University, consisting of Dr. Brooks, Dr. Uhler and the writer, were so fortunate as to find *Cordylophora lacustris* Allman, living in great abundance within seven or eight miles of Baltimore. The mouth of Curtis' creek, from the point

where it empties its cold clear spring waters into the Chesapeake bay, for a distance of one hundred and twenty yards up the stream, was densely populated with colonies of this beautiful organism. Attached to the water-plants (two species of *Potamogeton* and a *Nitella*), and to the rocks in the bed, and on the sides of the creek, they formed a delicate living fringe to every object in the stream. At the mouth of the creek its bed is about forty feet wide with a narrow channel on one side, in which the water, not over three or four feet in depth, flows very rapidly. In the channel where the sunlight is the strongest, owing to the much less abundant growth of vegetable life, where the current is most rapid, and nearest to the mouth, where the changes in the surrounding conditions must be greatest, there we found the colonies in their greatest luxuriance. The waters of the Chesapeake are only brackish in this northern part of the bay, and the tide rises and falls but ten or twelve inches; still this is sufficient to make quite an appreciable difference in the saltness, density and temperature of the water for a number of hundred yards up the stream. The variations in the conditions then must be considerable and the changes must be quite sudden, as they occur with the rise and fall of the tide. The nutritive hydranths too must be possessed of great activity and strength to enable them to catch and retain their food while the water is dashing by them at such a rapid rate. Another visit was made to the same locality in the last week in October, when we found the reproductive bodies of both sexes in great numbers. In these latter the reddish-brown branched spadix showed very distinctly in certain stages of development, ramifying through the opaque-white mass of the gonophore, and in later stages becoming resorbed. The specimens differ in no important respects from the figures and description of Allman. The color is usually a little brighter, being pinkish-red instead of reddish-brown; occasionally there are as many as eighteen or twenty tentacles, and occasionally the shallow annulations at the bases of the ultimate ramuli may be absent, but these all fall within the range of specific variation. Unlike Prof. Leidy's specimens, those from Curtis' creek agree in size with those of Prof. Allman. It is interesting to note that in one of the localities where Prof. Allman collected it, he found it associated with *Potamogeton* and *Lemna*, though not attached to them as many of our specimens were.

*Cordylophora* presents three special points of interest: 1. It

possesses a ramified spadix. 2. It is the only compound hydroid ever found in fresh water, and 3. The reproductive zooids are developed in a chitinous cup, while the nutritive zooids are not so developed or protected.

One of the nutritive hydranths showed, in a slight degree, the polystomatous condition which the zooids of this species at times present; and which has been described and figured by Mr. Hugh Price, of Oxford, England.<sup>1</sup> Mr. Price's specimens were obtained from the Victoria docks, and the polystomatous hydranths were found only on certain colonies. Some of these hydranths possessed as many as five distinct mouths, each one of which was supplied with a series of tentacles; though separated throughout their entire length, they remain united at the base, thus forming a small closely united group from a single hydranth. As the different mouth-bearing parts were very small and without tentacles in some of Mr. Price's specimens, and others were intermediate in size, he is inclined to consider this a regular mode of increase in the hydranths of this species. The single specimen of this kind obtained by us possessed two mouth-bearing portions, each with a set of tentacles and united at the base. Unfortunately it was not preserved and I have been unable to find any others in a similar condition.

There is but one other species of *Cordylophora* and it may not be out of place to mention it. Kirchenpauer found specimens of a compound hydroid growing upon buoys at highest tide limits in the river Elbe. These he describes in a letter to Busk as a new species of *Cordylophora*, giving them the specific name of *albicola*. It differs from *C. lacustris* in forming smaller colonies, in having the branches annulated throughout, and the perisarc terminates abruptly.

Habitat.—Grand Canal docks, Dublin, Allman; Commercial and West Indian docks, London, Bowerbank and Allman; a fresh-water cistern near London, Busk; Agricultural drains near Lyme Regis, Dr. Lowe; Canal near Ostend, Van Beneden; Schleswig, Semper; neighborhood of Stockholm, Sweden, Retzius; near Rostock, F. E. Schulze; Newport, Rhode Island, Leidy; Schuylkill river, near Philadelphia, Leidy; in basins in the Jardin des Plantes, Perrier; The Baltic, Möbius; Curtis' creek, near Baltimore, Md., S. F. Clarke.

<sup>1</sup> Quarterly Microscopical Journal, Vol. xxiv, New Series xvi, folio 23.